

## A METHOD OF STORING INSECT GENITALIA FOR TAXONOMIC STUDY<sup>1</sup>

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**ABSTRACT:** A genitalia tray specifically designed for use by insect taxonomists is described and illustrated. A method is outlined whereby trays can be reproduced using molds and a polyester-based casting resin. Trays are suitable for storage of genitalia during revisionary work, and provide immediate access to series of genitalia for comparative study.

Many insect taxonomists store adult insect specimens on pins in foam-bottomed trays, inside specially designed drawers and cabinets. Specimens stored in this manner are readily available for study and comparison of external structures. Unfortunately, a similar system has not been developed to accommodate the needs of taxonomists interested in studying large series of insect genitalia, so it is often necessary to repeatedly examine genitalia stored in microvials, or temporarily remove limited series of genitalia to porcelain trays or similar *ad hoc* containers for comparative study. With the increasing awareness of the importance of genitalic characters in the systematics of many insect taxa, a method is needed whereby numerous genitalia can be efficiently stored, easily retrieved and readily grouped for study under a dissecting microscope. The genitalia tray here described is one solution to this problem, and over the past several years has not only proved itself useful in practice, but has indirectly encouraged the senior author's study of genitalic structure within the Tachinidae (Diptera) by eliminating time-consuming and inefficient storage difficulties.

### MATERIALS AND METHODS

Design of the genitalia tray shown in Fig. 1, and technical aspects of its production and duplication, were developed by the junior author. Production of genitalia trays basically involves machining of a master tray, creation of one to many molds from that tray, and replication of plastic trays from the molds. Our master tray was cut from 0.5 in (12.7 mm) thick Plexiglass<sup>®</sup> and sanded to the outside dimensions shown in Fig. 1, and then machined with a 0.5 in milling tool to produce the interior contours. The completed tray, approximately 63x66 mm square, was placed in the center of a small wooden box, of such a size as to allow about 10 mm clearance on each side. A molding compound (Dow Corning Silastic Moldmaking Rubber RTV E, soft) was poured over the tray, covering the top by about 5 mm, and allowed

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to set. (To ensure smooth edges in the finished product, trapped air bubbles were removed from the angles of the tray by running a pointed object along tray edges.) Once hardened, the flexible molds were ready for repeated casting of plastic genitalia trays using a polyester-based casting resin, such as commonly found under a variety of brand names commercially and in hobby stores. White dye added to the resin gives superior results, as white trays reflect light more evenly than do clear plastic ones. This is important because the trays are designed for use with a dissecting microscope, with standard illumination.

For best results, trays should be lightly sanded on outside surfaces after removal from molds to smooth slight irregularities caused by shrinkage during the hardening process (interior surfaces are not adversely affected). Lids, which can be fashioned from a variety of materials, should be fitted to finished size of the trays rather than to dimensions of the master tray. (Our lids simply rest loosely on top of the trays, and are not fastened in any way.) We prefer 0.125in (3.2mm) thick Plexiglass® for lid material, as it is transparent and can be written on with India ink.

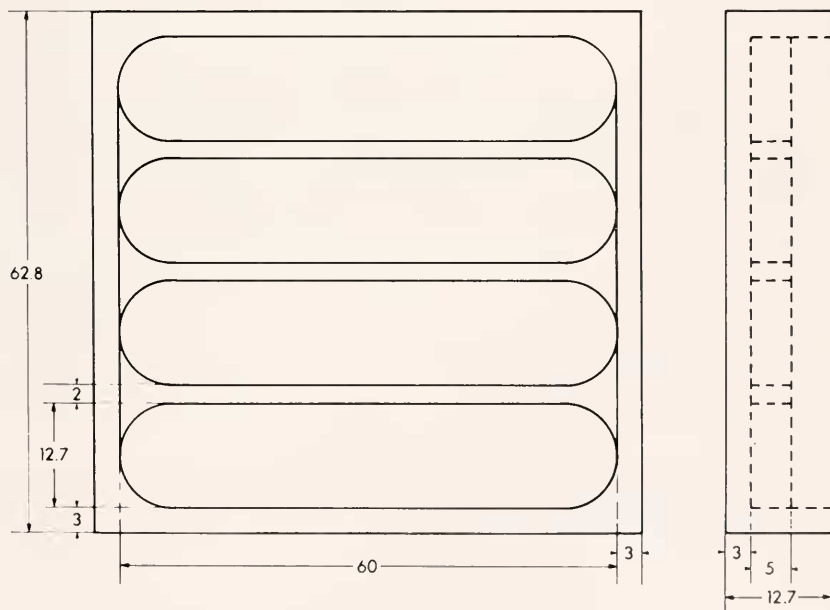


Fig. 1. Dimensions of genitalia tray (in mm).

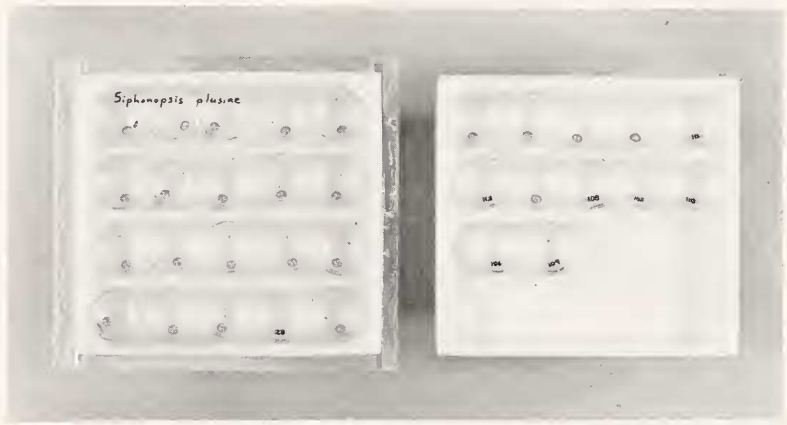


Fig. 2. Two completed trays, left tray with lid and right without, as used for storage of tachinid fly genitalia in glycerin-filled dishes.

## DISCUSSION

Each tray is designed to hold 20 genitalia dishes in 4 rows. Dishes are best cut to a height of 7mm from 0.5 dram, 12x35mm, shell vials (such as Kimble brand #60930-L vials). Genitalia are stored one per dish in several drops of glycerin, accompanied by a code number to ensure correct association with the adult specimen. By keeping a record of all code numbers and specimens dissected, pairing of pinned specimens and genitalia are facilitated, even if the former are scattered throughout a large general collection.

Two finished trays, as used for storage of tachinid fly genitalia, are shown in Fig. 2.

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